

## Original Research Article

## Practice of Paediatric Anaesthesia in Abidjan: One Year's Experience at the Gynaecology, Paediatrics and Obstetrics Centre of the Cocody University Hospital

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**Abstract: Introduction:** The aim of our study was to report on our experience in paediatric anaesthesia and describe the difficulties encountered. **Patients and Methods:** This was a retrospective, descriptive study conducted from 14 August 2024 to 14 August 2025 in the anaesthesia department of the gynaecology and paediatrics unit at Cocody University Hospital. All children aged between 12 hours and 18 years admitted to the operating theatre were included in the study. The parameters studied were epidemiological, anaesthetic and post-operative data. **Results:** We collected data on 390 patients. The average age of the patients was  $9.7 \pm 3.4$  years (range 12 months to 18 years). The sex ratio (M/F) was 2.8. All patients underwent a pre-anaesthetic consultation and the majority of them were classified as ASA I (75.94%). All anaesthesia was performed by a team of anaesthetists and state-registered anaesthetic nurses (100%). General anaesthesia was the most commonly used technique (71.28%). The average duration of anaesthesia was  $30.2 \pm 16$  minutes (range: 25 to 420 minutes). Analgesic therapy was multimodal. Mortality was 0.51%. Other discharge modalities were admission to paediatric surgery (99.2%) and paediatric intensive care (0.33%). **Conclusion:** Promoting the training of paediatric anaesthetists and building more hospitals exclusively for children would improve the situation.

**Keywords:** Anaesthesia, Paediatrics, Experience.

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## INTRODUCTION

In 2025, it is estimated that approximately 1.75 billion children worldwide will still lack access to safe, affordable and timely surgical care [1]. This situation particularly affects low- and middle-income countries (LMICs), where nearly 65% of the world's children live, but where more than 85% of unmet surgical needs are concentrated [1].

In these countries, infrastructure and specialised human resources remain largely inadequate, particularly in rural areas. In sub-Saharan Africa, children represent nearly 50% of the total population, but access to paediatric surgery is extremely limited: district hospitals lack paediatric anaesthetists, functional operating theatres and appropriate equipment [3].

A study conducted in 67 district hospitals in Malawi, Zambia and Tanzania showed that less than a

third had the capacity to perform basic paediatric surgery, and that most did not have trained anaesthetists or appropriate post-operative care protocols [3].

According to the Global Initiative for Children's Surgery (GICS), sub-Saharan Africa now accounts for nearly one-third of the global burden of childhood surgical diseases, illustrating the urgent need to strengthen local and regional capacity in paediatric surgery and anaesthesia [2-4]. Based on this observation, after establishing its first hospital dedicated solely to maternal and child care in February 2018, the Ivorian hospital environment was enriched in 2023 with another hospital reserved for maternal and child care. Two years after its creation, we wanted to use this work to provide feedback on the paediatric anaesthesia activities carried out there.

## PATIENTS AND METHOD

This was a retrospective, descriptive study conducted from 14 August 2024 to 14 August 2025 in the anaesthesia department of the gynaecology and paediatrics unit at Cocody University Hospital. All children aged 12 to 18 years admitted to the operating theatre were included in the study. The parameters studied were epidemiological, anaesthetic and post-operative data. Data entry and processing were performed using Epi Info software version 3.5.3. Qualitative results were expressed as frequencies and percentages; quantitative results were expressed as means with standard deviations.

## RESULTS

We collected data on 390 patients. The mean age of the patients was  $9.7 \pm 3.4$  years (range 12 hours to 18 years). The sex ratio (M/F) was 2.8. The mean weight was  $31.3 \pm 11.68$  kg, with extremes of 2.5 kg and 61 kg. The patients came from the paediatric surgery department (68%) and the paediatric emergency department (32%). All patients underwent a pre-anaesthetic consultation with an anaesthetist (100%). The majority of our patients had no medical or surgical history (74.6%). ASA class I was the most common (80%). Anaesthesia was scheduled (68%) and emergency (32%). Anaesthesia for all patients was performed jointly by an anaesthetist and a state-registered nurse anaesthetist. Orthopaedic surgery was the most common speciality (54.0%), followed by digestive surgery (44.0%) and maxillofacial surgery (2.0%). Trimming and osteosynthesis (32.0%), hernia repair (14.0%) and removal of osteosynthesis material (10.0%) were the most common surgical indications. General anaesthesia was the most commonly used technique (71.28%). Anaesthetic induction was intravenous (59%) and inhalation (41%). Maintenance was provided by sevoflurane (58%) and isoflurane (42%). One-third of our patients experienced agitation upon awakening and less than one percent experienced delayed awakening. The average duration of anaesthesia was  $50.2 \pm 16$  minutes (range: 45 to 420 minutes). Analgesic therapy was multimodal. Mortality was 0.51%. Other discharge modalities included admission to paediatric surgery (99.2%) and paediatric intensive care (0.33%).

## DISCUSSION

We recruited 390 patients with a mean age of  $9.7 \pm 3.4$  years, ranging from 12 months to 18 years. The 5- to 10-year age group was predominant. Deanna obtained a higher mean age than ours [5]. This difference could be explained by the difference in the study populations. In our study, the sex ratio (M/F) was 2.8. Many African series report similar results [6-8]. All patients underwent a pre-anaesthetic consultation with an anaesthetist. All patients were anaesthetised jointly by an anaesthetist and a state-registered nurse anaesthetist. Our

results differ from those of some sub-Saharan African teams, according to which 22.2% to 57% of anaesthetic procedures were supervised by an anaesthetist [9, 10]. Our results could be explained by the fact that the Gynaecology-Paediatrics Department at Cocody University Hospital is a centre of excellence in paediatric anaesthesia and intensive care. As a result, it has a well-staffed team of anaesthetists and intensive care physicians (13 senior and 18 junior) and state-registered nurse anaesthetists [13]. However, only 23.07% of these anaesthetists and intensive care physicians have additional training in paediatric anaesthesia and intensive care, whereas according to the latest recommendations for professional practice relating to structural organization.

Paediatric anaesthesia requires, regardless of the patient's condition, the presence of at least one anaesthesiologist-intensivist with regular paediatric practice and additional training in paediatric anaesthesia, assisted by a state-certified nurse anaesthetist with regular paediatric activity dedicated exclusively to the case [11]. The international standards are far from being met, and this situation is consistent with the findings of Eugène Zoumenou in his study *"The practice of anaesthesia in children in French-speaking sub-Saharan Africa: current situation and prospects for improvement."* None of the training schools in the sub-region offers a specific qualification such as a university diploma (DU) in paediatric anaesthesia. Among the 357 anaesthesiologists recorded, only 10 had completed a specific training placement of more than six months in paediatric anaesthesia (in France or Tunisia), and 7 had obtained an inter-university diploma (DIU) in paediatric anaesthesia [12].

In our study, anaesthesia was elective in 68% of cases and emergency in 32%. These figures are similar to those reported by Delphine *et al.*, which may reflect the efficiency of the healthcare system, allowing better scheduling and surgical management of patients [13]. Orthopaedic surgery accounted for the majority of interventions (54%), followed by digestive surgery (44%), while maxillofacial surgery represented 2%. Our results differ from those reported by Rede, who observed 29% orthopaedic procedures and 66% digestive surgeries [14]. The high prevalence of orthopaedic surgery in our cohort may be attributed to the predominance of children and adolescents, in whom limb trauma is frequent. Conversely, the predominance of digestive surgery in Rede's study could be explained by the younger age of their study population (2 months to 7 years), which included a greater number of infants and congenital digestive disorders [14]. General anaesthesia was the most commonly performed technique (71.28%). With regard to regional anaesthesia, the results of the present study show that its use remains modest, as previously reported in a Gabonese series [15]. However, our data also demonstrate a diversification of the techniques employed, providing evidence that regional anaesthesia

is gradually developing. The lack of specific training and the shortage of local anaesthetic agents could be contributing factors.

Anaesthetic induction was intravenous in 59% of cases and inhalational in 41%. Our results are consistent with several African studies [16, 17]. However, Essola in Gabon and Auroy in France reported a higher rate of inhalational induction compared with the intravenous route in their respective works [18]. Anaesthetic maintenance was achieved using sevoflurane (58%) and isoflurane (42%). The mean duration of anaesthesia was  $50.2 \pm 16$  minutes (range: 45–420 minutes). One third of patients presented with emergence delirium (ED). According to a meta-analysis of 16 studies involving 9,598 children, the combined prevalence of ED was approximately 19.2% (95% confidence interval: 12–29%) among children undergoing general anaesthesia [19]. In another systematic review (31 studies / 6,068 children), the median reported incidence was about 32% [20]. The presence in our series of certain risk factors such as the use of sevoflurane, pain, and younger age may explain the relatively high prevalence of ED observed.

The analgesic practices observed in our series (paracetamol 50%, ketoprofen 42%, morphine 8%) are in line with findings from African literature, where paracetamol and non-steroidal anti-inflammatory drugs (NSAIDs) constitute the majority of analgesic prescriptions, while the systemic use of paediatric opioids varies according to availability, regulation, and local protocols [21–23]. However, the mortality observed (0.51%) was higher than the rates reported in European audits of paediatric anaesthesia, but comparable to those described in African series of paediatric emergency surgery, where postoperative mortality remains high due to a large proportion of emergency cases and structural limitations [24, 25].

## CONCLUSION

Paediatric anaesthesia practice continues to expand in Côte d'Ivoire despite numerous structural and functional challenges. Promoting specialised training for paediatric anaesthetists and constructing more hospitals dedicated exclusively to children would help to improve the situation in our country.

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